Section 5-4: Indirect Proof

By the end of this lesson, you should be able to answer:
- How do you write indirect algebraic proofs?
- How do you write indirect geometric proofs?

Define the following:
1. Indirect Reasoning

2. Indirect Proof

3. Proof by Contradiction

Steps to Write an Indirect Proof:
1.

2.

3.

Example 1: State the assumption necessary to start an indirect proof for each statement.

a. $\overline{EF}$ is not a perpendicular bisector.

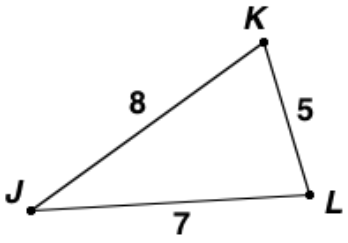
b. $3x = 4y + 1$

c. If B is the midpoint of $\overline{LH}$ and $LH = 26$, then $\overline{BH}$ is congruent to $\overline{LB}$.

Example 2: Write an indirect proof to show that if $-2x+11<7$, then $x>2$.

Example 3: Write an indirect proof to show that if x is a prime number not equal to 3, then $\frac{x}{3}$ is not an integer.

Example 4: Prove by contradiction.
Given: $\triangle JKL$ with side lengths 5, 7, and 8 as shown.
Prove: $m\angle K < m\angle L$



Problem Set:

"It's not that I'm so smart, it's just that I stay with problems longer." – Albert Einstein